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EXAMINER
LEWIS, MONICA

ART UNIT	PAPER NUMBER
2822	

DATE MAILED: 03/11/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/914,077	Applicant(s) KAWAMURA ET AL.	
	Examiner Monica Lewis	Art Unit 2822	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 December 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6,9-19 and 28-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6,9-19 and 28-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☒ The proposed drawing correction filed on *05 December 2002* is: a)☒ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

1. This office action is in response to the amendment filed December 5, 2002.

Response to Arguments

2. Applicant's arguments with respect to claims 1-6, 9-19 and 28-30 have been considered but are moot in view of the new ground(s) of rejection.

Specification

3. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 9-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is not clear what is meant by the following: a) "as viewed in a planar direction perpendicularly to a plane of said substrate" (See Claim 9); b) "substrate is implemented in a three bonded layer" (See Claim 14); and c) "circularly in a planar shape" (See Claim 18). Claims 10-13 and 15-17 and 19 depend directly or indirectly from a rejected claim and are, therefore, also rejected under 35 U.S.C. 112, second paragraph for the reasons set above.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

7. Claims 9, 11-13 and 30, as far as understood, rejected under 35 U.S.C. 102(a) as being anticipated by Droz (U.S. Patent No. 6,176,010).

In regards to claim 9, Droz discloses the following:

a) a substrate (1) having an IC element (25) mounted thereon (See Figure 6 and Figure 8);

b) IC element formed integrally with an antenna coil for performing data communication in a contact less manner with external equipment (See Figure 8); and

c) IC element and said antenna coil being disposed at a center portion of said substrate as viewed in a planar direction perpendicularly to a plane of said substrate (See Figure 8).

In regards to claim 11, Droz discloses the following:

a) only one surface of said IC element is covered with said substrate (See Figure 6 and Figure 8).

In regards to claim 12, Droz discloses the following:

a) substrate is formed in a circular or square planar shape (See Figure 6 and Figure 8).

In regards to claim 13, Droz discloses the following:

a) substrate is wholly or partially formed of paper (See Column 3 Lines 24-27).

In regards to claim 30, Droz discloses the following:

a) the entirety of said coil is formed on a surface of said IC element (See Figure 8).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 1, 2, 4-6, 19, 28 and 29, as far as understood, are rejected under 35 U.S.C. 103(a) as obvious over Droz (U.S. Patent No. 6,176,010) in view of Inoue (U.S. Patent No. 4,960,983).

In regards to claim 1, Droz discloses the following:

a) a conductor (8) constituting said coil is implemented in a multilayer structure (2, 2', 2'', 2''') (See Figure 6).

In regards to claim 1, Droz fails to disclose the following:

a) a metal-sputtered layer or alternatively a metal-evaporated layer and a metal plated layer.

However, Inoue discloses the use of sputtering metal layers (See Column 4 Lines 15-27). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor of Droz to include sputtering metal layers as disclosed in Inoue because it aids in providing a connection among the various components (See Column 4 Lines 15-27).

Additionally, the limitation of "metal-sputtered layer or alternatively a metal-evaporated layer and a metal plated layer" makes it a product by process claim. The MPEP § 2113, states, "Even though product -by[-] process claims are limited by and defined by the process, determination of patentability is based upon the product itself. The patentability of a product

does not depend on its method of production. If the product in product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product is made by a different process." *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985)(citations omitted).

A *"product by process"* claim is directed to the product per se, no matter how actually made, *In re Hirao and Sato et al.*, 190 USPQ 15 at 17 (CCPA 1976) (footnote 3). See also *In re Brown and Saffer*, 173 USPQ 685 (CCPA 1972): *In re Luck and Gainer*, 177 USPQ 523 (CCPA 1973); In re Fessmann, 180 USPQ 324 (CCPA 1974); and *In re Marosi et al.*, 218 USPQ 289 (CAFC 1983) final product per se which must be determined in a *"product by, all of"* claim, and not the patentability of the process, and that an old or obvious product, whether claimed in *"product by process"* claims or not. Note that Applicant has the burden of proof in such cases, as the above caselaw makes clear.

Finally, since Droz and Inoue are both from the same field of endeavor, the purpose disclosed by Inoue would have been recognized in the pertinent art of Droz.

In regards to claim 2, Droz discloses the following:

a) at least one metal of aluminum, nickel, copper and chromium or alternatively an alloy containing those metals (See Column 3 Lines 39 and 40).

In regards to claim 2, Droz fails to disclose the following:

a) a metal-sputtered layer or alternatively a metal-evaporated layer and a metal plated layer.

However, Inoue discloses the use of sputtering metal layers (See Column 4 Lines 15-27). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor of Droz to include sputtering metal layers as disclosed in

Inoue because it aids in providing a connection among the various components (See Column 4 Lines 15-27).

Additionally, the limitation of "metal-sputtered layer or alternatively a metal-evaporated layer and a metal plated layer" makes it a product by process claim. The MPEP § 2113, states, "Even though product -by[-] process claims are limited by and defined by the process, determination of patentability is based upon the product itself. The patentability of a product does not depend on its method of production. If the product in product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product is made by a different process." *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985)(citations omitted).

A *"product by process"* claim is directed to the product per se, no matter how actually made, *In re Hirao and Sato et al.*, 190 USPQ 15 at 17 (CCPA 1976) (footnote 3). See also *In re Brown and Saffer*, 173 USPQ 685 (CCPA 1972): *In re Luck and Gainer*, 177 USPQ 523 (CCPA 1973); In re Fessmann, 180 USPQ 324 (CCPA 1974); and *In re Marosi et al.*, 218 USPQ 289 (CAFC 1983) final product per se which must be determined in a *"product by, all of"* claim, and not the patentability of the process, and that an old or obvious product, whether claimed in *"product by process"* claims or not. Note that Applicant has the burden of proof in such cases, as the above caselaw makes clear.

Finally, since Droz and Inoue are both from the same field of endeavor, the purpose disclosed by Inoue would have been recognized in the pertinent art of Droz.

In regards to claim 4, Droz discloses the following:

a) coil is implemented in a rectangular spiral pattern in a planar shape and all or some of corner portions of said rectangular spiral pattern are chamfered (See Figure 8).

In regards to claim 5, Droz fails to disclose the following:

a) metal-plated layer is formed by resorting to a electroless plating method or alternatively an electroplating method or alternatively a precision electroforming method.

However, the limitation of "electroless plating method or alternatively an electroplating method or alternatively a precision electroforming method" makes it a product by process claim. The MPEP § 2113, states, "Even though product -by[-] process claims are limited by and defined by the process, determination of patentability is based upon the product itself. The patentability of a product does not depend on its method of production. If the product in product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product is made by a different process." *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985)(citations omitted).

A *"product by process"* claim is directed to the product per se, no matter how actually made, *In re Hirao and Sato et al.*, 190 USPQ 15 at 17 (CCPA 1976) (footnote 3). See also *In re Brown and Saffer*, 173 USPQ 685 (CCPA 1972): *In re Luck and Gainer*, 177 USPQ 523 (CCPA 1973); In re Fessmann, 180 USPQ 324 (CCPA 1974); and *In re Marosi et al.*, 218 USPQ 289 (CAFC 1983) final product per se which must be determined in a *"product by, all of"* claim, and not the patentability of the process, and that an old or obvious product, whether claimed in *"product by process"* claims or not. Note that Applicant has the burden of proof in such cases, as the above caselaw makes clear.

In regards to claim 6, Droz fails to disclose the following:

a) line width of said coil is not smaller than 7 um, an inter-line distance thereof is not greater than 5 um and the number of turns thereof is not smaller than 20 turns.

However, the applicant has not established the critical nature of the dimension of "7 um, an inter-line distance thereof is not greater than 5 um and the number of turns thereof is not smaller than 20 turns." "The law is replete with cases in which the difference between the claimed invention and the prior art is some range or other variable within the claims. . . . In such a situation, the applicant must show that the particular range is critical, generally by showing that the claimed range achieves unexpected results relative to the prior art range." *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir.1990).

In regards to claim 19, Droz fails to disclose the following:

a) another discrete coil which is separately formed independent of said IC element internally of said substrate.

However, Inoue discloses two coils that are formed independent of the IC element internally of said substrate (See Figure 1). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor of Droz to include two coils as disclosed in Inoue because it aids in transferring energy and information to the card (See Column 3 Lines 46-54).

Finally, since Droz and Inoue are both from the same field of endeavor, the purpose disclosed by Inoue would have been recognized in the pertinent art of Droz.

In regards to claim 28, Droz fails to disclose the following:

a) a resistance of said metal-plated layer is less than a resistance of said metal sputtered layer or said metal evaporated layer.

However, Inoue discloses the use of sputtering metal layers (See Column 4 Lines 15-27). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor of Droz to include sputtering metal layers as disclosed in

Inoue because it aids in providing a connection among the various components (See Column 4 Lines 15-27).

Additionally, the limitation of "metal-sputtered layer or alternatively a metal-evaporated layer and a metal plated layer" makes it a product by process claim. The MPEP § 2113, states, "Even though product -by[-] process claims are limited by and defined by the process, determination of patentability is based upon the product itself. The patentability of a product does not depend on its method of production. If the product in product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product is made by a different process." *In re Thorpe*, 227 USPQ 964, 966 (Fed. Cir. 1985)(citations omitted).

A *"product by process"* claim is directed to the product per se, no matter how actually made, *In re Hirao and Sato et al.*, 190 USPQ 15 at 17 (CCPA 1976) (footnote 3). See also *In re Brown and Saffer*, 173 USPQ 685 (CCPA 1972): *In re Luck and Gainer*, 177 USPQ 523 (CCPA 1973); In re Fessmann, 180 USPQ 324 (CCPA 1974); and *In re Marosi et al.*, 218 USPQ 289 (CAFC 1983) final product per se which must be determined in a *"product by, all of"* claim, and not the patentability of the process, and that an old or obvious product, whether claimed in *"product by process"* claims or not. Note that Applicant has the burden of proof in such cases, as the above caselaw makes clear.

Finally, since Droz and Inoue are both from the same field of endeavor, the purpose disclosed by Inoue would have been recognized in the pertinent art of Droz.

In regards to claim 29, Droz fails to disclose the following:

a) the entirety of said coil is formed on a surface of said IC element (See Figure 8).

10. Claim 3 is rejected under 35 U.S.C. 103(a) as obvious over Droz (U.S. Patent No. 6,176,010) in view of Inoue (U.S. Patent No. 4,960,983) and McDonough et al. (U.S. Publication No. 2001/0044013).

In regards to claim 3, Droz discloses the following:

a) coil is formed on a surface of said IC element formed with input/output terminals with interposition of an electrically insulative surface passivation film (See Figure 6 and Column 3 Lines 43-45).

In regards to claim 3, Droz fails to disclose the following:

a) IC element and said coil are electrically interconnected through through-holes formed in said surface passivation film and each having a diameter smaller than a line width of said coil.

However, McDonough et al. ("McDonough") discloses the use of a though-holes in the dielectric film (See Paragraph 52). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor of Droz to include a through-holes as disclosed in McDonough because it aids in providing electrical contact among the various components (See Paragraph 52).

Finally, since Droz and McDonough are both from the same field of endeavor, the purpose disclosed by McDonough would have been recognized in the pertinent art of Droz.

11. Claim 10, as far as understood, is rejected under 35 U.S.C. 103(a) as obvious over Droz et al. (U.S. Patent No. 6,176,010) in view of Masahiko (U.S. Patent No. 5,852,289).

In regards to claim 10, Droz fails to disclose the following:

a) top and bottom surfaces of said IC element are covered with said substrate.

However, Masahiko discloses top and bottom surfaces of an IC element (123) covered with substrate (122 and 121b) (See Figure 18). It would have been obvious to one having

ordinary skill in the art at the time the invention was made to modify the semiconductor of Droz to include top and bottom surfaces of said IC element are covered with said substrate as disclosed in Masahiko because it provides a base for the device to be built upon (See Figure 18).

Finally, since Droz and Masahiko are both from the same field of endeavor, the purpose disclosed by Masahiko would have been recognized in the pertinent art of Droz.

12. Claims 14 and 15, as far as understood, are rejected under 35 U.S.C. 103(a) as obvious over Droz et al. (U.S. Patent No. 6,176,010) in view of McDonough et al. (U.S. Publication No. 2001/0044013)

In regards to claim 14, Droz discloses the following:

a) a substrate is implemented in a three-bonded-layer structure including a top member, a bottom member and an intermediate member (See Column 3 Lines 25-32).

In regards to claim 14, Droz fails to disclose the following:

a) IC element is accommodated within a through-hole formed in said intermediate member at a mid portion thereof.

However, McDonough discloses the use of though-holes in the dielectric film (See Paragraph 52). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor of Droz to include a through-holes as disclosed in McDonough because it aids in providing electrical contact among the various components (See Paragraph 52).

Finally, since Droz and McDonough are both from the same field of endeavor, the purpose disclosed by McDonough would have been recognized in the pertinent art of Droz.

In regards to claim 15, Droz fails to disclose the following:

a) though-hole is formed circularly in a planar shape.

However, McDonough discloses the use of though-holes in a circular shape (See Figure 1 and Paragraph 52). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor of Droz to include a through-holes as disclosed in McDonough because it aids in providing electrical contact among the various components (See Figure 1 and Paragraph 52).

Finally, since Droz and McDonough are both from the same field of endeavor, the purpose disclosed by McDonough would have been recognized in the pertinent art of Droz.

13. Claims 16-18, as far as understood, are rejected under 35 U.S.C. 103(a) as obvious over Droz et al. (U.S. Patent No. 6,176,010) in view of Fidalgo (U.S. Patent No. 5,598,032).

In regards to claim 16, Droz discloses the following:

a) substrate is implemented in a two-bonded-layer structure including a top member and a bottom member (See Column 3 Lines 25-32).

In regards to claim 16, Droz fails to disclose the following:

a) IC element is accommodated within a recess formed in said top member or alternatively in said bottom member at a mid portion thereof.

However, Fidalgo discloses a chip placed in a recess (See Column 5 Lines 31-50). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor of Droz to include a chip placed in a recess as disclosed in Fidalgo because it provides a means for components to interconnect (See Column 5 Lines 31-50).

Finally, since Droz and Fidalgo are both from the same field of endeavor, the purpose disclosed by Fidalgo would have been recognized in the pertinent art of Droz.

In regards to claim 17, Droz discloses the following:

a) substrate is implemented in a single layer structure (See Column 3 Lines 25-32).

In regards to claim 17, Droz fails to disclose the following:

a) IC element is accommodated within a recess formed in said substrate at a mid portion thereof.

However, Fidalgo discloses a chip placed in a recess (See Column 5 Lines 31-50). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor of Droz to include a chip placed in a recess as disclosed in Fidalgo because it provides a means for components to interconnect (See Column 5 Lines 31-50).

Finally, since Droz and Fidalgo are both from the same field of endeavor, the purpose disclosed by Fidalgo would have been recognized in the pertinent art of Droz.

In regards to claim 18, Droz fails to disclose the following:

a) recess is formed circularly in a planar shape.

However, Fidalgo discloses a recess that can have different shapes (See Column 5 Lines 34-35). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor of Droz to include a recess that can have different shapes as disclosed in Fidalgo because it provides a means for components to interconnect (See Column 5 Lines 34-35).

Finally, since Droz and Fidalgo are both from the same field of endeavor, the purpose disclosed by Fidalgo would have been recognized in the pertinent art of Droz.

14. Claims 19, as far as understood, is rejected under 35 U.S.C. 103(a) as obvious over Droz et al. (U.S. Patent No. 6,176,010) in view of Inoue (U.S. Patent No. 4,960,983).

In regards to claim 19, Droz fails to disclose the following:

a) another discrete coil which is separately formed independent of said IC element internally of said substrate.

However, Inoue discloses two coils that are formed independent of the IC element internally of said substrate (See Figure 1). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor of Droz to include two coils as disclosed in Inoue because it aids in transferring energy and information to the card (See Column 3 Lines 46-54).

Finally, since Droz and Inoue are both from the same field of endeavor, the purpose disclosed by Inoue would have been recognized in the pertinent art of Droz.

Conclusion

15. The following prior art made of record and not relied upon is considered pertinent to applicant's disclosure: a) Iwasaki (U.S. Patent No. 5,710,458) discloses a card like semiconductor device; b) Kohama et al. (U.S. Patent No. 5,856,662) discloses an information carrier; c) Haghiri-Tehrani et al. (U.S. Patent No. 6,049,461) discloses a circuit unit; and d) Hirai et al. (U.S. Patent No. 6,160,526) discloses a IC card..

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Monica Lewis whose telephone number is 703-305-3743. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amir Zarabian can be reached on 703-308-4905. The fax phone number for the organization where this application or proceeding is assigned is 703-308-7722 for regular and after final

communications. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

ML

March 5, 2003

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